

Drying

Coloring

Processing

Machining and fabrication

Joining to dissimilar materials

Post-treatment of the finished articles

Injection molding

→ **Temperature settings**

Recycling of scrap

Mold design / Surface structure

Extrusion

Screw design

Processing parameters

Adapters and extrusion dies

Cooling and calibrating the extrudate

Extruded articles

Defects in extrusion

Profile extrusion

**Webtools ...**

Troubleshooting

Unit Converter

Bayer links

Bayer Global

Bayer MaterialScience

BayerONE

TechCenter PC-Films

TechCenter Plastics

Getting to Bayer

Thermoplastics Testing Center

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Privacy Statement

Imprint

Home > Processing > Temperature settings

## Temperature settings for cylinder and mold

### Injection unit

Desmopan® should be processed at melt temperatures of between 190 and 220 °C. Wi may be needed. The melt temperature ranges for the individual Desmopan® grades can

Figure 1 shows guide values for the settings for cylinder and nozzle heating in relation t

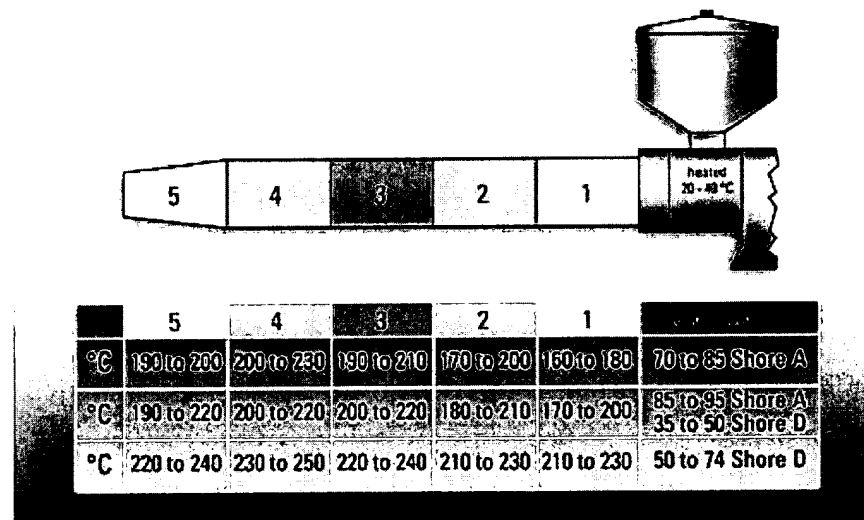


Fig. 1 Temperature profile according to hardness range

### Mold

The mold temperature has a major influence on the quality of the surface and the demo (frozen-in) stresses in the final component. Normally, mold temperatures of 20 - 40 °C v and with glass fiber reinforced Desmopan®, mold temperatures of up to 60 °C will be ne

With thick-walled articles, cooling down to approximately 5 °C can bring a reduction in c

### Plastication

For plastication, the speed should be selected in such a way that the peripheral velocity stroke should be between 1 D and 4 D. The following figure shows the maximum speed

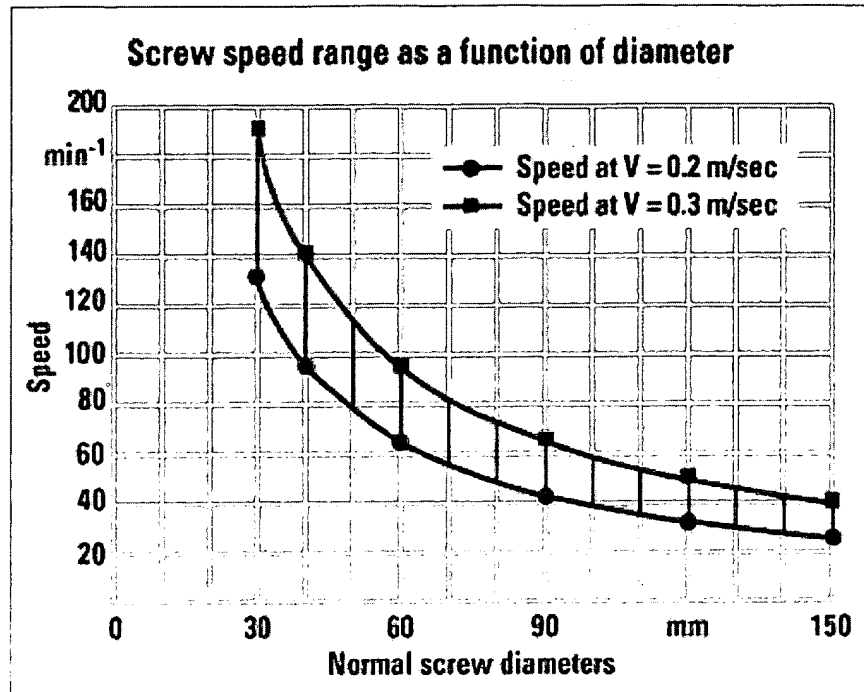


Fig. 2 Screw speed range as a function of diameter

Practical experience has shown that a 30 - 75% capacity utilization of the respective cylinder relation to the capacity of the cylinder, the dwell time of the melt in the plasticating unit \ damage to the melt.

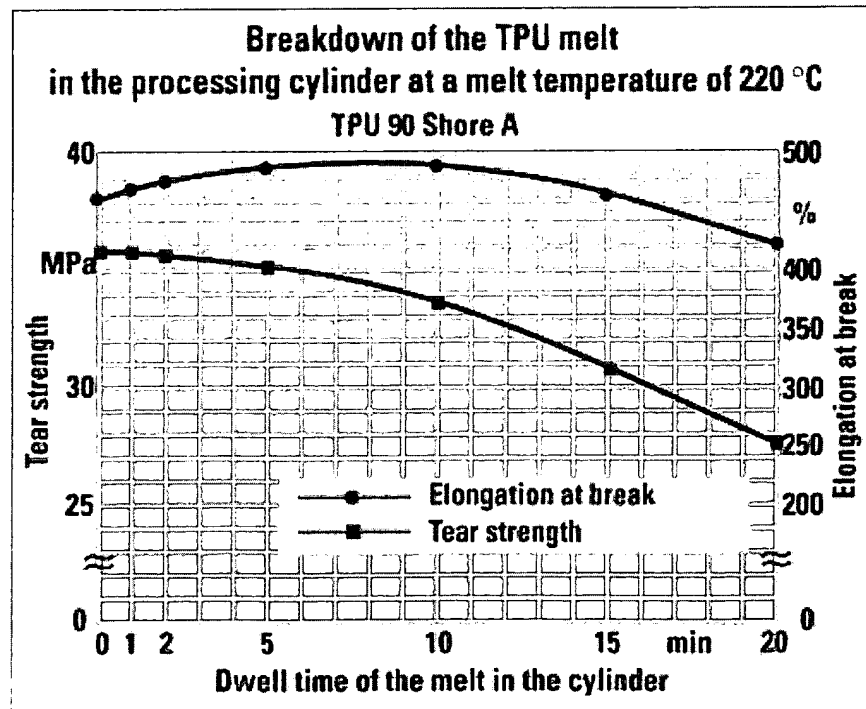


Fig. 3 Breakdown of the TPU melt in the processing cylinder

Injection pressure, holding pressure, back pressure, injection speed

For perfect processing, stepless control of the pressures and injection speeds is essent holding pressure in a range from 100 to 1,200 bar. The back pressure needed for homc

injection pressure. The injection speed will depend primarily on the wall thickness. In general, thick-walled articles require high injection pressure, and thin-walled articles fast filling.

Apart from the wall thickness and type of gating, the venting of the mold plays an important role. Poor venting can cause "burn marks" caused by highly compressed hot air.

The biggest influence on the dimensional stability and demoldability of the component is the injection pressure. Excessive injection pressure overloads the molding, while too low a holding pressure produces oversized moldings.

Overloaded moldings are more difficult to demold. It is advisable to work with staggered injection pressure. As a rule, a holding pressure of 50 % of the injection pressure is sufficient to produce moldings with a minimum of internal stresses.

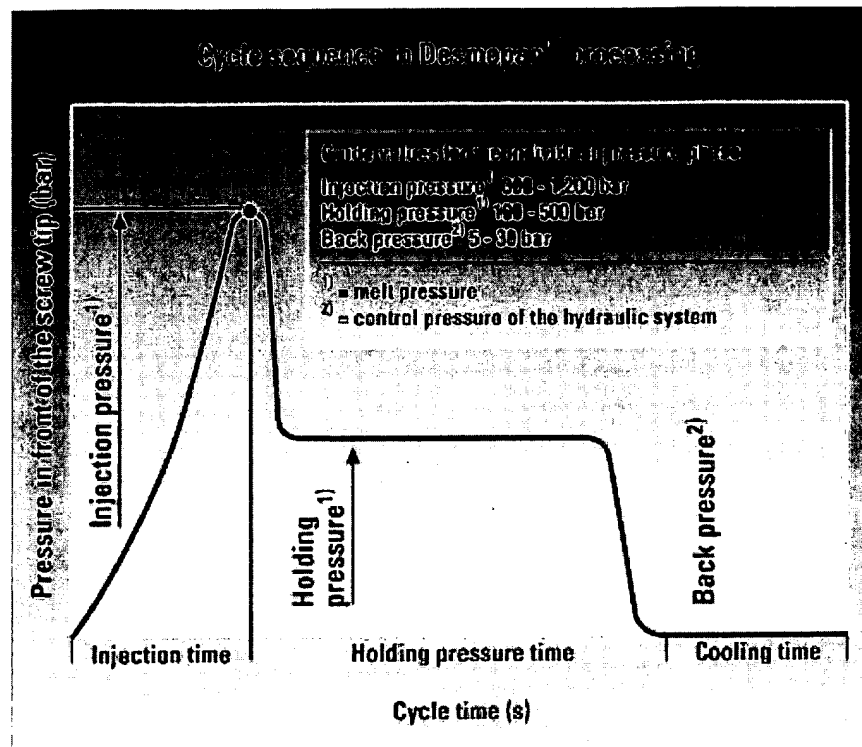


Fig. 4 Typical cycle sequence in Desmopan processing

### Cycle times

The cycle time is governed by the shape of the article, the wall thickness, the cooling of the mold, and the material properties.

The following figure shows how the wall thickness affects the duration of an injection cycle. For a given material and mold, the cycle time increases with the wall thickness.

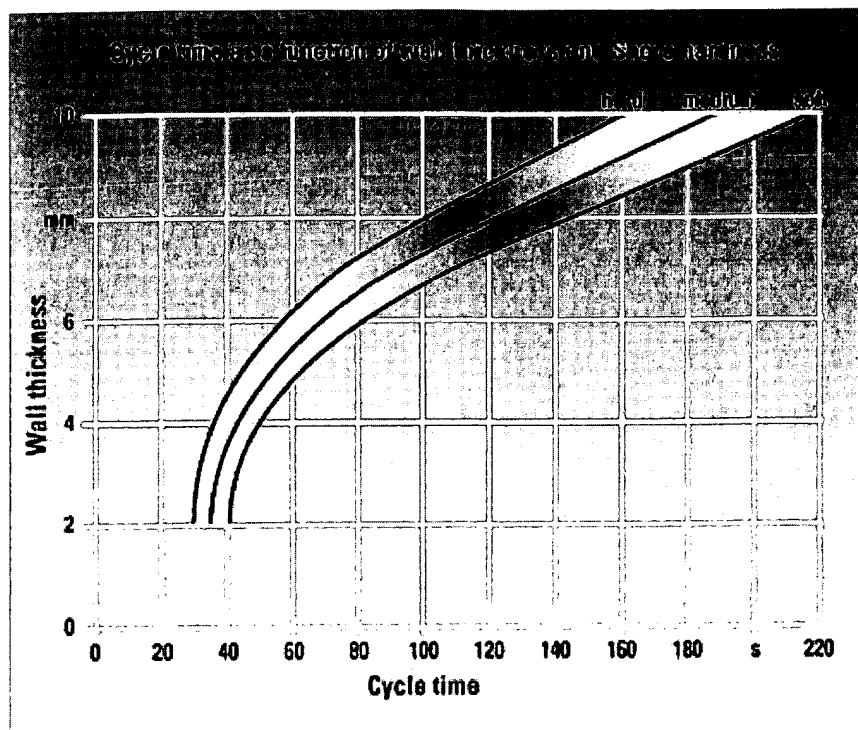


Fig. 5 Cycle time as a function of wall thickness and Shore hardness

### Demolding

Desmopan® reproduces mold detail very well indeed. Particularly with the soft TPU grade. This must be taken into account when designing the mold.

Release agents can be used as demolding aids. Silicone-based release agents such as release agents are also suitable but must be applied more frequently.

☐ Contact us

☐ Language

☐ Printversion

☐ To the top

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[Drying](#)
[Coloring](#)
[Processing](#)
[Machining and fabrication](#)
[Joining to dissimilar materials](#)
[Post-treatment of the finished articles](#)
[Injection molding](#)
[Temperature settings](#)
[Recycling of scrap](#)
[Mold design / Surface structure](#)
[Extrusion](#)
[Screw design](#)
[→ Processing parameters](#)
[Adapters and extrusion dies](#)
[Cooling and calibrating the extrudate](#)
[Extruded articles](#)
[Defects in extrusion](#)
[Profile extrusion](#)
[Webtools ...](#)
[Troubleshooting](#)
[Unit Converter](#)
[Bayer links](#)
[Bayer Global](#)
[Bayer MaterialScience](#)
[BayerONE](#)
[TechCenter PC-Films](#)
[TechCenter Plastics](#)
[Getting to Bayer](#)
[Thermoplastics Testing Center](#)
[General Conditions of Use](#)
[Privacy Statement](#)
[Imprint](#)
[Home > Processing > Processing parameters](#)

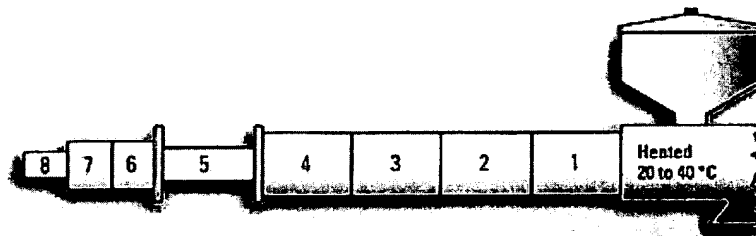
## Processing parameters

### Temperature setting for the barrel and die

The extrusion temperatures for Desmopan® are in the range between 160 and 220 °C. Desmopan® grades can be found in the product information sheets.

Figure 1 gives approximate temperatures for heating the barrel and die.

The level of gloss on the article surface can be influenced by the die temperature. Low temperatures glossy surfaces.



1	2	3	4	5	6	7	8	Die Head
170 to 210	170 to 200	170 to 200	170 to 200	170 to 210	170 to 200	170 to 190	170 to 180	70 to 90 °C
180 to 220	180 to 210	180 to 210	180 to 210	180 to 220	180 to 210	180 to 200	180 to 200	92 to 95 Shore A 40 to 53 Shore D

Fig. 1 Approximate temperatures for heating the barrel and die

### Screw speed

In addition to the temperature, the screw speed also exerts a major influence on the quality of the extruded article.

Low screw speeds mean that the melt has to spend a long time in the extruder, with the result that the article is more prone to thermal degradation.

Excessive screw speeds also lead to thermal decomposition due to friction. Speeds of 100 to 200 rpm are recommended for Desmopan®.

[Contact us](#)
[Language](#)
[Printversion](#)
[To the top](#)

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